Modeling Of Multiple Intelligence Theory With Bayes Theorem

BAHADTIN RUZGAR*, NURSEL SELVER RUZGAR**
*Banking and Insurance School, Actuaries Department, Marmara University
Goztepe Campus, Kadikoy, 34722, Istanbul, TURKEY
bruzgar@marmara.edu.tr, http://mimoza.marmara.edu.tr/~bruzgar/

**Vocational School of Social Sciences, Marmara University
Beyazit Campus, Eminonu, Istanbul, TURKEY
nruzgar@marmara.edu.tr

Abstract: - In this work, multiple intelligence theory proposed by Gardner, a professor of education at Harvard University, is tried to be modeled by Bayesian Theorem under two hypotheses. Howard Gardner initially formulated a list of seven intelligences, and then added two more. As a different approach, if set theory for multiple intelligences is used, the structure of multiple intelligences to set theory under four properties of intelligence algebra can be generalized. Assuming that the number of intelligences increases, n, Boolean algebra in set theory can be applicable. At this point, Bayesian theorem, application of conditional probability, generates a good structure for multiple intelligences. In this work, Bayesian Theorem was applied to two hypotheses, mutually intersections of n intelligences are empty and non-empty sets, and using conditional probability, it can be shown that multiple intelligences and Bayesian Theorem are in good harmony or multiple intelligences can be clarified by Bayesian theorem.

Key-Words: - Multiple intelligences, Bayesian Theorem, Modeling.

1 Introduction

Intelligence in old periods was rather defined as "speed thinking". Even, humans called people who exhibited superior success in daily life as "superior intelligence". Intelligence is the integration of abilities and skills peculiar to each person in order to be able to adapt to life and changes in the changing world. According to Binet, intelligence is the capacity of good reasoning, good judging and self-criticizing [1]. According to Wechsler, intelligence is the capacity used by an individual to behave purposeful, think intelligently and cope with his environment effectively [2]. According to Woolfolk, intelligence is the ability of an individual to use his inherited or learned mental functions to acquire knowledge, remember, recall, solve problems or adapt to world [3]. According to Piaget, intelligence is a definite harmonized behavior model that means organization of action with thought and its reorganization [4]. According to Gardner, intelligence is the integration of abilities and skills peculiar to each person in order to be able to live in the changing world and adapt to changes [5]. Gardner grouped intelligence in eight kinds; verbal, musical, visual, logical, mathematical, bodily, interpersonal, intrapersonal and naturalist. Thorndike grouped intelligence in three kinds; abstract, mechanical and social [6]. Guilford determined 120 intelligence factors. According to the Group Factor Theory of Thurnstone, intelligence can be divided into primary abilities in some definite number. "The primary ability" term contains seven factors; numeric problem solving, oral recognition, memorizing, general reasoning, oral smoothness (word producing etc), recognizing shape relations, sensitive speed. According to Stenberg, intelligence consists of various combinations. These are; experiencing and learning ability from life, abstract thinking or reasoning ability, adaptation ability to caprices of changing and unclear world, and fast performing ability of the works that must be performed and motivation ability [7]. While psychologists define intelligence as a capacity, educators define it as ability [8]. "Frames of mind": The theory of the multiple intelligences" (Thinking style: multiple intelligence theorem) suggested by Harward Gardner in 1983 eliminated the influence of intelligence on societies and education that lasted for years; that is the traditional intelligence test and intelligence definition that only considers the language and mathematic intelligence [9]. Gardner defended that intelligence has eight directions instead of two. So he claimed that not only the people who are successful in language and mathematic but also people who are successful in music, sport, dance, communication, nature, painting are intelligent [10].

2 Modeling of multiple intelligences

Intelligence is the capacity to solve problems in different cases experienced throughout of life and to create new products. For this reason, intelligence must be defined with clear dimensions as in mathematical operation. A mathematical operation requires